论文

基于Hoek-Brown参数确定方法的多煤层开采工作面 矿压显现规律模拟研究

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摘要：

结合宁东矿区任家庄矿的生产实例，利用基于Hoek-Brown强度准则确定煤、岩体力学参数的方法，运用FLAC 3D软件模拟分析了任家庄矿3号和5号煤层开采中的矿压显现规律，并根据现场工作面巷道围岩应力和表面收敛监测结果，对比分析了数值模拟结果的准确性。研究发现：基于Hoek-Brown经验强度准则所确定的煤、岩体力学参数与标准煤岩样的实验室测定值有明显差异，两者间并非简单折减关系，而与岩体结构特点、完整岩石强度和开挖影响等因素有关。现场多煤层开采中矿压显现规律的实测与数值模拟结果的比对，进一步验证了基于Hoek-Brown准则确定煤、岩体力学参数的有效性和合理性。

关键词： Hoek-Brown准则；多煤层开采；矿压显现；数值模拟

Application of Hoek Brown criterion in numerical simulation of ground pressure features in multi seam longwall mining

Abstract:

Based on the longwall panel layout at Renjiazhuang Coal Mine in Ningdong mining area，using the method for determining the mechanical and physical properties of rock mass based on the Hoek Brown criterion，the characteristics of ground pressure distribution in multi seam coal mining at different panels in No.3 and No.5 coal seams were simulated by FLAC 3D software.In addition，the pressure and displacement of surrounding rock were monitored and the monitoring data were compared with the numerical simulation results.The results show that the properties of rock mass calculated by Hoek Brown criterion are obviously different with the properties of rock sample obtained by standard experiments.They are not just a simple addition and reduction relationship.The method used to determine the rock mass parameters in this study took account for the factors of structure characteristics of rock mass，rock strength，excavation disturbance，etc.The comparison of the in situ monitoring data and the numerical simulation results demonstrates the validity and rationality of the property determination method based on the Hoek Brown criterion.

Keywords: Hoek Brown criterion；multi seam coal mining；ground pressure；numerical simulation

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